

ABSTRACT

A method and an apparatus is designed to produce X-ray or EUV radiation for use in lithography, microscopy, materials science, or medical diagnostics. The radiation is produced by urging a substance through an outlet (6) to generate a microscopic jet (2) in a direction from the outlet (6), and by directing at least one energy beam (1') onto the jet (2), wherein the energy beam (1') interacts with the jet (2) to produce the X-ray or EUV radiation. The temperature of the outlet (6) is controlled to increase the directional stability of the jet (2). The thus-achieved directional stability of the jet (2) provides for reduced pulse-to-pulse fluctuations of the produced radiation, improved spatial stability of the radiation source, as well as high average power since the energy beam (1') can be tightly focused on the jet (2), even at a comparatively large distance from the jet-generating outlet (6). The large distance provides for low erosion of the outlet(6), even when using a high-power energy beam (1').

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35 Elected for publication: Fig. 1